UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

NOT APPROVE
APP S, APP T
UNDER APP 2, NOT APPROVE

June 15, 1993

Ms. Diane M. Leber
Ciba-Geigy Corporation
444 Saw Mill River Road
Ardsley, NY 10502-2699

Re: CIBA-GEIGY Cranston Site: Phase I Interim Report & Phase II Proposal (P1RP2P)- **CONDITIONAL APPROVAL CHs. 1-8, 10-14, 15.1-4 & 6, 16-18, APPENDICES A-R AND V-X**

Dear Ms. Leber:

The EPA has completed its review of Ciba-Geigy's Phase I Interim Report & Phase II Proposal (P1RP2P). The Agency has **approved** chapters 1-8, 10-14, 15.1-4 & 6, 16-18, and Appendices A-R & V-X under the condition that the comments identified in the enclosure to this letter are resolved as discussed with you and the EPA project manager. These comments must be addressed as follows:

- Comments #1, 4, 6, 8, 9, 11, 13, 18-26, 30-41 and 43-56 may be addressed by submitting revised pages/tables/figures or maps for substituting into the (P1RP2P).

- Comments #2, 3, 5, 7, 12, 14, 15, 28, 29, 42, and 57 may be addressed by submitting an addendum to the (P1RP2P).

- Comments #10, 16, 17, and 27 need not be addressed at this time but must be addressed in the RFI Report.

Ciba-Geigy shall submit a response to these comments to the EPA project manager by July 30, 1993. Ciba-Geigy shall begin implementation of the approved tasks in the Warwick, Waste Water Treatment, and Off-Site areas upon submittal of the proposed Stabilization Final Design Document and in the Production area upon submittal of the Stabilization Conceptual Design Document. Ciba-Geigy shall have 8 months to complete the final field task for each area.

If you have any questions on the format for resolving these comments, please contact Frank Battaglia at (617) 573-9643.

Sincerely,

Gary B. Gosbee, Chief
MA & RI Waste Regulation Section

Enclosure

COPY

TECHNICAL REVIEW - PHASE I INTERIM REPORT AND PHASE II PROPOSAL

CHAPTER 3 - PHASE I GEOLOGICAL INVESTIGATION

1. **Figure 3-6:** Either the value for piezometer P-19D (-41.90 feet) or the contours in this area appear to be incorrect. This should be corrected.

CHAPTER 4 - PHASE I HYDROGEOLOGICAL INVESTIGATION

2. **Page 4-6:** The discussion of the till states that it appears to act as an aquitard, however, because the till is discontinuous there is some potential for good hydraulicconnection between the two aquifers where the till is absent. There should be more discussion on the areas where the till is absent and whether these areas are a concern due to possible migration of overburden aquifer contaminants.

3. **Fig. 4-7 & Table 4-4:** Chapter 4 states that there is little or no potential for the bedrock aquifer to become contaminated because an upward gradient exists. However, a slight downward gradient appears to exist at well cluster MW-11S, MW-6S, P-18D, and RW-3 all in the SWMU 5 area. There should be a more thorough discussion of the characteristics and the relationship between the aquifers and the gradients.

4. **Table 4-2:** A footnote which explains the codes used for "method of development" should be provided.

5. **Table 4-3:** Storativity values should be listed on this table.

6. **All Figures:** All figures should indicate the date for which the water levels represent and have the numerical data points on the figure.

7. The stratigraphy should be added since flow lines and equipotentials should refract across hydraulic conductivity boundaries (such as the clay unit).

8. **Figure 4-2:** The value for RW-1 (9.17 feet) does not agree with the value shown on table 4-4. This should be corrected.

9. **Figure 4-6:** This cross section has several errors. The wells/piezometers P-14S, P-14D, MW-10S, MW-10D, P-13S, P-6M are not located in the same place where they are portrayed in plan view maps. It appears that the wells may be incorrectly labeled making the trace of this cross section unreasonable for making flow interpretations, since it is constructed along a sharp bend. This should be corrected.

CHAPTER 6 - PHASE I RELEASE CHARACTERIZATION: PRODUCTION AREA

10. The Phase I Interim Report and Phase II Proposal attempts to present a reduced version of the analytical data by using summary tables which dis[illegible]veral different ways. This first appear[illegible]hen throughout the rest of the document[illegible]se tables certain assumptions are [illegible] parameters are met. EPA questions the [illegible]tions and statistical parameters p[illegible]e to amend and approve their use in any[illegible]r to inclusion in the RFI Report. For [illegible]tions the method of selecting the "Baseli[illegible] the calculation of the "Mean Total Concentration" and the presentation of the "# of analytes detected".

SEE PG. 5-18 RISK ASSESSMENT GUID FOR SUBSURFACE MAY USE GEOMETRIC MEAN CONC. FOR BASELINE/ BACKGROUND/CONC DATA SETS

11. **Page 6-11:** The soil summary table indicates a maximum VOC hit of 9.4 ppm. Table 6-2 shows a maximum hit of 33 ppm at B-3A. These tables should be corrected.

12. **Page 6-28:** A more thorough discussion should be given on why additional sampling of Bedrock well RW-1 will not be performed in Phase II. The discussion should include the adequacy of existing data based on detection limits and analytes detected, relationship of contamination with depth, and evaluation of the stratigraphy and hydraulic gradients.

13. **Table 6-3:** The mercury level at B-11C exceeded the background soil range but was not highlighted. Is this concentration correct?

CHAPTER 7 - PHASE I RELEASE CHARACTERIZATION: W.W. TREATMENT AREA

14. **Page 7-13&14:** A more thorough discussion should be given on why additional sampling of wells RW-2 and MW-15D will not be performed in Phase II. The discussion should include the adequacy of existing data based on detection limits and analytes detected, relationship of contamination with depth, and evaluation of the stratigraphy and hydraulic gradients.

CHAPTER 8 - PHASE I RELEASE CHARACTERIZATION: WARWICK AREA

15. **Page 8-8&17:** A more thorough discussion should be given on why additional sampling of wells RW-3 and MW-17D will not be performed in Phase II. The discussion should include the adequacy of existing data based on detection limits and analytes detected, relationship of contamination with depth, and evaluation of the stratigraphy and hydraulic gradients.

CHAPTER 10 - PHASE I OFF-SITE INVESTIGATION

16. There should be more discussion on published background concentrations for soils.

17. **Page 10-4:** The metals and PAH's identi
may be indicative of non-background con
fill may have been deposited here). Th
to be reevaluated to determine its appr
background soil location or some statis
weight this outlier will have to be agr

SOIL/SEDIMENT BACKGROUND CONC d MAY BE FOUND IN e
• COUNTY SOIL CONSERV SERVICE, OR
• USGS REPORTS ETC

CHAPTER 11 - SELECTION OF INDICATOR COMPOUND

18. **General:** The CSF for 1,2-Dichloropropane should be changed to 6.8×10^{-2} which comes directly from HEAST. This number and all calculations using this number should be corrected.

19. Region I policy, until HQ develops policy or values, for PAH oral route exposure is, for non-carcinogens, to use verified reference doses or, if unavailable, the reference dose of 4×10^{-3} mg/kg-day for naphthalene.

20. **Page 11-5:** A discussion on transport between media should be included.

21. **Page 11-11:** The first paragraph refers to RCRA-Recommended Levels in the proposed Subpart S Rule. These are examples offerred in the proposed rule and Region I does not advocate their use since many are outdated. IRIS and HEAST should be used for performing the dose response section.

22. Region I does not agree with or approve of the splitting of risk levels based on carcinogenic classification as stated in the third paragraph. All carcinogens should be treated the same for this screening process and a risk level of 1×10^{-6} should be used.

23. **Page 11-12:** The Case 2 discussion states that the 26 analytes with minimum detection limits above the estimated risk based levels are to be included in Phase II analysis. In order for this scenario not to occur once again in Phase II, the detection limits must be reduced to the risk based levels.

24. **Page 11-13:** The analysis for the Case 3 analytes as described in the 1st paragraph should be provided.

25. The detection limits described in the 2nd bullet should be addressed.

SPOKE 6-18-93 (CIGA) WITH DIANE AND AGREED TO SAMPLE NEW LOCATIONS TWICE AND EXISTING LOCATIONS ONCE DURING PHASE II. SAMPLE FOR APP IX & FING.

26. The values described in the 4th bullet for the six chemicals should be identified or a discussion on how these compounds will be addressed should be provided since these compounds were found in soil/sediment as shown in Appendix X-44.

CHAPTER 13 - INTRODUCTION TO THE PHASE II PROPOSAL

27. It should be noted that ground water samples from existing wells will also be used to assess seasonal variations in contaminants in addition to verification purposes. This should be stated in future reports.

CHAPTER 14 - PHASE II PHYSICAL CHARACTERIZATION PROPOSAL

28. There needs to be more discussion on why a deep well will not be needed in the southern portion of the WWT Area at the proposed location of MW-25S.

CHAPTER 15 - PHASE II RELEASE CHARACTERIZATION PROPOSAL

29. There needs to be more discussion on the rationale for excluding sampling the deep ground water at SWMU-10 and SWMU-12.

30. **Table 15-2:** The well MW-32S was not included in this table.

CHAPTER 16 - PHASE II OFF-SITE INVESTIGATION PROPOSAL

31. All tables and figures should be modified to reflect changes in sampling strategy.

32. **Pages 16-3 & 4:** Rather than re-verifying all four background surficial soil locations, the investigation should re-verify the outlier location at Belmont Park and one other location, and select two new locations, if access is available, to further expand on the background investigation. The new locations should be approved by EPA prior to sampling. APP IX & FING. EXISTING ONCE NEW TWICE

33. The background ground water study needs an additional shallow well located upgradient of the production area.

34. **Page 16-6:** Round 1 of the additional off-site investigation should sample five new locations in addition to resampling the 11 Phase I locations identified in the Order. Some new locations which can be found on figure 10-5 are Roberts Circle, Lakewood area south and southeast of the facility, Pawtuxet Reservation east of facility and Warwick Avenue southeast of facility. Round 2 should sample all locations. All round 1 and round 2 samples should be analyzed for indicator compounds which are all compounds found on-site.

35. The last paragraph should state that data comparison will include Phase I data as well as Phase II data.

CHAPTER 17 - PRELIMINARY EVALUATION OF CORRECTIVE MEASURES

36. **Page 17-8:** Since current ground water data shows the presence of iron and manganese above 1 ppm, pretreatment for the removal of metals will be probable and chemical/electrochemical precipitation needs to be included in any pilot testing performed.

37. **Page 17-14:** More justification is needed for not retaining biological treatment of soils for further evaluation. The reason given is that it does not remove heavy metals, but vapor extraction also does not remove heavy metals and this technology is retained for further evaluation. In addition, biological treatment is being retained for evaluation for other media of concern where metals are of possible concern.

38. **Page 17-16:** Will insitu biological treatment of ground water be evaluated as well? This technology may be beneficial if the data listed in Table 17-3 indicates that biodegredation is occurring in the aquifer.

39. **Page 17-18:** Paragraph 2 states that "water/solvent leaching" technology is not retained for further evaluation but on page 17-14 it states that it is. This contradiction needs to be corrected.

APPENDIX B - DATA MANAGEMENT

40. **Table B-7:** The data qualifiers NR and U are not included in this (validated data) table.

41. **Table B-9:** If the validated data qualifer was a J, ND or U then the final data should show the estimated value or detection limit. All data qualifier issues should be corrected as discussed.

APPENDIX U - DOWNHOLE GEOPHYSICAL LOGGING QA DOCUMENT

42. EPA is in agreement with Ciba-Geigy's request to not conduct this activity due to the information gathered during the Stabilization Investigation. For the record, a written request and justification as previously discussed, should be submitted as an addendum to the Phase I Interim Report and Phase II Proposal. This request will be approved upon receipt.

APPENDIX V - PHASE IB ANALYTICAL DATA

43. A comparison of the raw data in Appendix V and the data summary tables in chapters 6 through 10 do not agree. Some analytes are missing from Appendix V and some hits are not included in the summary tables. If there are errors they should be corrected. Some form of key to the location of data in Appendix V should be included.

APPENDIX W - PHASE IB ANALYTICAL DATA - REJECTIONS

44. What do the codes signify in this table and how will rejected analytes be replaced in the data base. This should be explained in the intro to this Appendix. There should be a column that shows why the analytes were rejected.

APPENDIX X - INDICATOR AND REFERENCE DATA

45. **General:** Indicator compound and target compound tables should indicate why the compounds were selected.

46. The titles of some tables are incorrect and should be corrected.

47. **Table X-44:** RfD's were not included for carcinogens. EPA Region I risk guidance requires that possible noncarcinogenic effects of carcinogens be evaluated. All available RfD's for classified carcinogens should be listed.

48. For the purpose of ranking chemicals for the selection of indicator compounds the Cadmium RfD 1×10^{-3} for food could be used for chemicals in soils and the Cadmium RfD 5×10^{-4} for water could be used for chemicals in ground water.

49. The slope factor for 1,2-dichloropropane is 6.8×10^{-2}.

50. The RfD's for Selenium and Silver are 5×10^{-3}.

51. An explanation as to why the inhalation slope factor for Trans-1,4-dichloro-2-butene was used for the oral exposure route should be included in this table.

52. EPA has no value for lead in soils and one should not be proposed. If levels are found below background then EPA may allow them to be eliminated. The ECAO has an interim value for cobalt that should be used.

53. **Table X-45:** Footnote "c" should be described.

54. **Tables X-62 to 76:** These tables are incomplete and should be completed (ex., the dioxin/furans and the fingerprint compounds are not listed).

55. Some of the tics listed in section 11.3.4 on page 11-10 are not included in these tables (ex., 1,1-Biphenyl in Pawtuxet river water). These omissions should be corrected. These tables show organics in ground water for indicator chemicals as a small subset of Appendix IX when in fact many more organics should be included. This should be corrected.

56. **Table X-76:** This table incorrectly lists some indicator chemicals. This should be corrected.

APPENDIX Y - PHASE II GROUND WATER FLOW MODELING

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~~MA & RI Waste Regulation Section~~

CONCURRENCES

SYMBOL	HRR-CAPS Enclosure HRH						
SURNAME	BBattaglia	CORO					
DATE	6-15-93	6/15/93					

EPA Form 1320-1 (12-70)

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